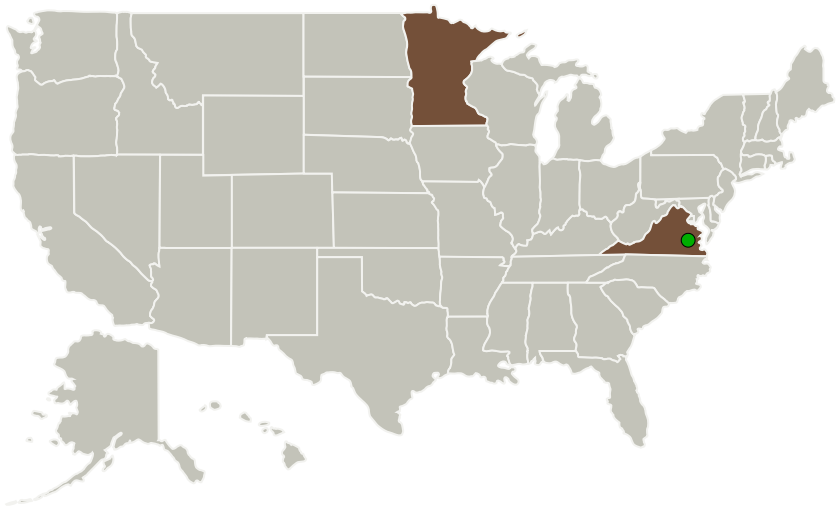
Fault-Tolerant NDE Data Reduction Framework, Phase I

Completed Technology Project (2016 - 2016)

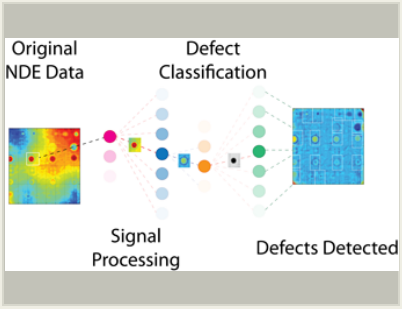
Project Introduction

A distributed fault tolerant nondestructive evaluation (NDE) data reduction framework is proposed in which large NDE datasets are mapped to thousands to millions of parallel, independent processes running on a mobile device, standard computer, or a networked cluster of machines. Each process scans a subset of the data for flaws and as independent entities are unaffected by errors in fellow processes or system failures. If a process fails, only its work is lost as the system continues to process the data; the work lost is immediately picked up by another process. The results of the parallel analyses are compiled back to the original dataset with structural flaw indicators. Phase I efforts are devoted to designing the framework and providing a proof of concept prototype able to automatically detect defects in NDE data.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Emphysic, LLC	Lead Organization	Industry	Minnetonka, Minnesota
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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Primary U.S. Work Locations	
Minnesota	Virginia

Project Transitions

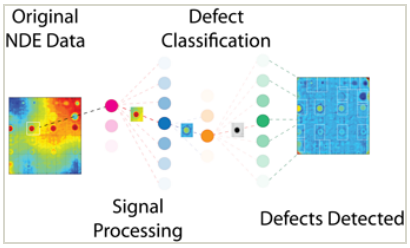
June 2016: Project Start

December 2016: Closed out

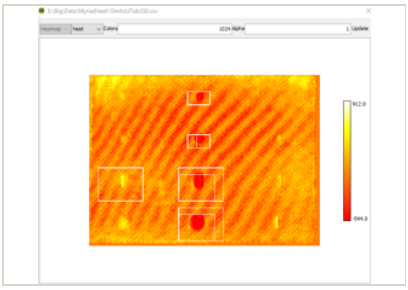
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139866)*

Images



Briefing Chart Image
Fault-Tolerant NDE Data Reduction Framework, Phase I
(https://techport.nasa.gov/image/127553)



Final Summary Chart Image
Fault-Tolerant NDE Data Reduction Framework, Phase I Project Image
(https://techport.nasa.gov/image/126345)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Emphysic, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

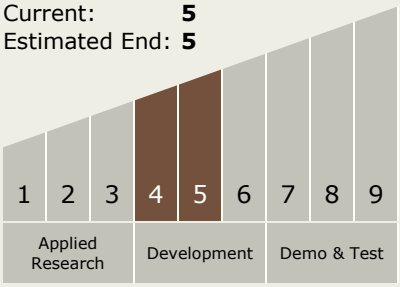
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Chris Coughlin

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Fault-Tolerant NDE Data Reduction Framework, Phase I

Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.4 Manufacturing
    - TX12.4.5 Nondestructive Evaluation and Sensors

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System